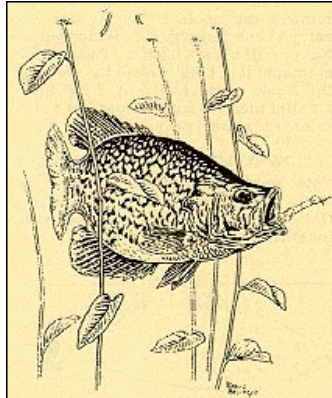




MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES



2004 FISH ADVISORY

The Missouri Department of Health and Senior Services is concerned that people eat a healthy diet. Fish is a good source of high quality protein and essential nutrients that will contribute to a healthy diet if eaten regularly. Fish is low in cholesterol and some types of fish have fats (omega-3 fatty acids) that may be beneficial in reducing heart disease; therefore, we want to be sure that fish caught and eaten from Missouri waters are safe for consumption by anyone. To help accomplish this goal, the Missouri Department of Conservation (MDC) has done extensive annual sampling and analysis of fish throughout Missouri since 1985. The Missouri Department of Natural Resources also conducts fish sampling in cooperation with the U.S. Environmental Protection Agency. The results of that sampling are reviewed by the Department of Health and Senior Services to determine if eating Missouri fish poses a health risk to the public.

Chlordane Contamination

Revised Advisory

In 2001, we removed the advice that recommended people eat no more than one meal a week of catfish, carp, buffalo, drum, suckers and paddlefish from areas outside the Ozark region of the state because levels of the contaminants in these fish have gone down in the past few years. For the 2004 Fish Advisory, except for a few specific named locations and any areas where warning signs are posted, **these fish are safe to eat in any amounts throughout Missouri.** We believe the reason this contamination has gone down is due to the removal of the termite pesticide chlordane from the market by the Environmental Protection Agency in 1988.

Mercury Contamination

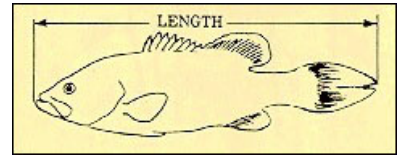
Advisory

In 2001, the Missouri Department of Health and Senior Services issued an advisory because of mercury or more specifically, methylmercury contamination. Methylmercury is an organic form of mercury that is easily absorbed into the living tissue of aquatic organisms and is not easily eliminated. The department had been concerned about mercury contamination in fish for a number of years and had been carefully monitoring the national debate and international health studies related to this issue. These studies indicated that fish with mercury in them at levels similar to those found in Missouri



Largemouth Bass that were greater than 12 inches in length could cause children's nervous system development to be slowed down and possibly permanently affected. Results of these studies, and new risk estimates by the U.S. Environmental Protection Agency that were based on these studies, convinced us that **mercury levels in some Missouri fish pose a health threat to our children.**

Therefore, the Missouri Department of Health and Senior Services began advising women who are pregnant, who may become pregnant, nursing mothers, and children 12 years of age and younger not to eat any Largemouth Bass over 12 inches in total length from anywhere in Missouri. Be advised that your body may take more than a year to significantly reduce amounts of mercury.



Contaminant Sampling

Sampling and analysis of Largemouth Bass by the MDC indicate that mercury contamination is widespread, and present in fish in streams, rivers, ponds, and lakes throughout Missouri. The amount of mercury in fish seems to be mostly related to their size and the type of food they eat. For example, large fish that eat other fish have higher concentrations of mercury in them than smaller fish or fish that eat things that live on the bottom. That is why our advisory is for the whole state. The MDC is committed to the continued collection and analysis of predatory fish such as bass, walleye, and other selected species to determine mercury concentrations. These efforts will provide the Department of Health and Senior Services with the contaminant information necessary to issue additional advisories if the need arises.

The reason that mercury seems to be distributed throughout the state is because of the way it got here.



Mercury is a naturally occurring element that has been used by man in many ways for thousands of years. It is found in thermometers, electrical switches and batteries, and is used in many mining and manufacturing processes as well as some cultural and religious practices. Over time, some of this mercury was released or improperly discarded. Today, we are still releasing mercury when we burn municipal trash, when we burn coal to produce electricity, or to heat or power buildings and factories. Once this mercury is released to the atmosphere it can travel great distances before it settles back to the earth and enters our streams, rivers, ponds or lakes. During its movement among the atmosphere, land, and water, mercury undergoes a series of complex chemical transformations. One of the products of these transformations is the organic form called methylmercury. From there, it is absorbed by

microscopic plants and animals, which are eaten by small animals and fish that are in turn eaten by bigger and bigger fish. This causes the mercury to become most concentrated in the largest predator fish, and in much of Missouri that is the Largemouth Bass.

For more information, see the Missouri Department of Natural Resources' fact sheet titled: "Mercury in Missouri Streams and Lakes," which is available on the Internet at:

<http://www.dnr.mo.gov/oac/pub2100.pdf>



Starting in the spring of 2004, MDC began a study that will help to develop a new monitoring program to provide better confidence and understanding of contaminants, such as mercury, in game fish species. This study will help improve our knowledge of the range of contaminant concentrations in selected game fish species and improve our fish advisory. This study may eventually be used to develop more targeted advisories.

Conducted statewide over a two-year period, the study will involve sampling fish at 12 sites per year where mercury or other contaminants such as PCBs and chlordane have been detected in the past.

Missouri will continue to monitor levels of mercury in fish populations in order to provide Missouri anglers with the most current information so they can continue to safely eat fish caught in Missouri.

In the 2002 contaminant sampling, mercury was found in the fillets of several sampled fish species. We only have an advisory on Largemouth Bass over 12 inches in length because they had mercury levels of human health concern.

The following table displays sampled fish that had mercury in their fish fillets. If you desire information on the levels of mercury found a particular fish species, contact Department of Health and Senior Services at (573) 751-6160.



Fish with Mercury in Fillets from the State-wide 2002 Fish Contaminant Sampling

Bottom Feeders	Insect/Other Types of Feeders	Predator Fish Feeders
Black Bullhead	Bluegill Sunfish	Bowfin
Blacknose Redhorse	Crappie	Chain Pickerel
Carp	Paddlefish	Largemouth Bass ¹
Catfish	Redear Sunfish	Longnose Gar
Freshwater Drum	Rock Bass	Shadow Bass
Suckers	Trout	Smallmouth Bass
Stonerollers		Spotted Bass
		Walleye
		White Bass

¹ advisory for fish over 12 inches in length



Nationwide Consumer Information

NEW INFORMATION:

The U.S. Food and Drug Administration (FDA) and the U.S. Environmental Protection Agency (EPA) have also issued a joint consumer advisory (FDA News Release, March 19, 2004) recommending that **women who are pregnant, women of childbearing age who might become pregnant, nursing mothers and young children NOT EAT any shark, swordfish, King Mackerel, or tilefish. They should also LIMIT CONSUMPTION of albacore “white” tuna to no more than six ounces (one average meal) per week because of mercury contamination.**

See the following EPA link for more information: <http://www.epa.gov/OST/fish/>

Lead Contamination

Advisory

The Missouri Department of Health and Senior Services is continuing its advisory for **all species of sunfish (locally known as bream or perch), carp, redhorse, and other suckers found in the Big River in St. Francois and Jefferson counties, the Flat River in St. Francois County from Highway “B”, six miles downstream to where it enters the Big River, and sunfish from Big Creek near the town of Glover in Iron County, Missouri.** These fish have been found to contain lead at levels of significant health concern and **should not be eaten.**

Contaminant Sampling

Lead-mine waste piles in the area have contaminated the rivers with lead at levels of health concern. **Since 1980, the Department of Health and Senior Services has recommended people not eat carp, redhorse, or suckers from the Big River downstream from Desloge to the mouth of the river where it enters the Meramec River.** For a few years in the late 1980s, we also found catfish contaminated with lead at levels of health concern. Sampling since 1992, however, indicates that **catfish no longer pose a health risk.** Sunfish were captured and analyzed for the first time in 1993 and were also found to be contaminated. The Missouri Department of Conservation is continuing to sample fish from these waters and that sampling indicates that sunfish, carp, redhorse, and other suckers in the Big River and Flat River are still contaminated with lead at levels of health concern. State officials believe that substances released from a nearby lead smelter have contaminated the sunfish in Big Creek near Glover.



Species- and Water-Body-Specific Advisory Summary

Some species of fish in certain water bodies in Missouri are contaminated with chemicals at levels of health concern. *We recommend you NOT EAT the following fish from these specific waterbodies.*



LARGEMOUTH BASS

Throughout Missouri Largemouth Bass over 12 inches in total length have been found to be contaminated with mercury at levels of health concern to children whose nervous systems are still in a developmental stage. **Therefore, women who are pregnant, who may become pregnant, who are nursing, and children 12 years of age or younger should not eat any Largemouth Bass over 12 inches in length from anywhere in Missouri.** Remember it is still safe and healthy for other persons to consume Largemouth Bass that are legal to keep because the levels of mercury are only harmful to a child's developing nervous system. Also, the reason it is still safe for women and children to eat Largemouth Bass smaller than 12 inches in length is because these fish are younger, they consume smaller prey, and have not consumed enough fish over a long enough period of time to have elevated levels of mercury in their bodies.

STURGEON

In the Missouri and Mississippi Rivers. Sturgeon and sturgeon eggs have been found to have a combination of PCBs and chlordane at levels of health concern, and should not be eaten.

SUNFISH...CARP...REDHORSE...AND OTHER SUCKERS



The Big River in St. Francois and Jefferson counties, and the Flat River in St. Francois County from Highway "B", six miles downstream to where it enters the Big River. These fish have been found to contain **lead** at levels of health concern, and should not be eaten.

SUNFISH



Big Creek in Iron County near Glover, Missouri. These fish have been found to contain **lead** at levels of health concern, and should not be eaten.



For the rest of the state, use the following guidelines when deciding how much and what species of fish to eat.

CATFISH...CARP...BUFFALO...DRUM...SUCKERS...PADDLEFISH



Except for the areas mentioned above, we have removed our recommendation to restrict consumption of these fish. Therefore, except for carp, redhorse, and suckers in the Big River in St. Francois and Jefferson counties, and the Flat River in St. Francois County from Highway "B", six miles downstream to where it enters the Big River (as discussed above) **these fish may be eaten in any amount.**

SMALLMOUTH BASS...SUNFISH...CRAPPIE...TROUT

Some fish such as Smallmouth Bass, sunfish, and crappie are lower in fat and less likely to contain contaminants than the fish discussed previously. We feel you may also eat as much of these types of fish from anywhere in Missouri as often as you like, except sunfish from the Big River and Flat River and from Big Creek in Iron County, discussed previously. Trout, even though they contain high levels of fat, are also safe to eat from anywhere in the state.

ALL FISH - ALL AREAS

Smaller fish have lower levels of contamination than larger fish of the same species. Eat the smaller legal fish and release the lunkers so they can fight another day.

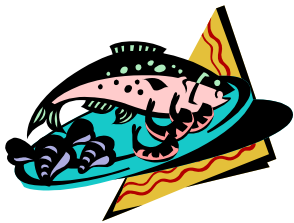
If warning signs are posted, follow those guidelines. **These specific warnings are special cases.**

The levels of some chemicals in any of the fish you eat can be reduced by carefully trimming away the fat when the fish is cleaned (See attached trimming and cooking guide). **Note: Trimming fat will not reduce lead or mercury contamination. Cooking cannot eliminate mercury and lead.**

If these guidelines are followed, you will not have any risk of acute (short-term) adverse health effects. The risks of getting certain types of cancer or harming the development of children's nervous systems may increase when large amounts of contaminated fish are eaten, but we are confident that if this advisory is followed, the risk will be very low.



In an industrial society like ours, approximately one person out of three or four will get some type of cancer in their lifetime, and unfortunately, some children's nervous systems will be adversely affected. The cause may be from a family history of cancer, radiation from the sun, lifestyle exposures such as smoking cigarettes or chewing tobacco, man-made chemicals, naturally occurring chemicals or other known or unknown causes. We believe that in comparison to all these other risks, the benefits of eating fish greatly outweigh the risk.



TRIMMING AND COOKING YOUR FISH TO REDUCE FAT AND CHEMICAL CONTAMINANTS

1. Fillet your fish, or if cooking with the bones in, remove all internal organs.
2. Trim away fatty portions of the fish such as the dorsal, lateral, and belly area. (See diagram below.)
3. Remove the skin from your fish.
4. Do not eat the eggs. They are very high in fat.
5. Bake, grill, or broil your fish on a rack and let the fat drip away. Do not use the juices. Avoid pan-frying in butter or animal fat, or making soups or chowders. These methods retain fat-laden juices. If you deep-fry your fish, do not reuse the oil. Contaminants will become concentrated in that oil.
6. Trimming fat or special cooking methods will not reduce the levels of metals, such as lead or mercury, from fish.

